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The writer believes that limits should be taught entirely from the standpoint of inequalities. If a variable  $x$  assumes a sequence of values such that  $|x - a|$  becomes and remains less than a pre-assigned positive number which is arbitrarily small,  $x$  is said to approach  $a$  as a limit. This is a quite generally accepted form of the definition. Its application depends absolutely and finally on the existence or non-existence of a certain inequality. The fact should be definitely emphasized that the positive number is assigned *first*. If after that the variable takes such values that the prescribed inequality exists, the variable has a limit, otherwise not.

This principle of the "order of choice" can not be over emphasized. It must be first the epsilon, then the variable. If this sequence is disturbed, the limiting argument breaks down completely. A variety of illustrations may be necessary to drive the principle home and make it stick. Numerical examples can be used to advantage. Instructive exercises may be given in finding the largest permissible numerical error in determining a required number so that the percentage error should be less than a specified value. Such examples will illustrate merely the skeleton of the argument. A constant effort should be made to induce beginners to waive temporarily any scriptural convictions they may have that the first should be last and the last should be first and to learn, in their mathematical reasoning at least, to put first things first and last things last.

### III. GEOMETRIC PROOF OF THE LAW OF TANGENTS.

By C. A. EPPERSON, Northeast Missouri State Teachers College.

Let  $a > b$ . Draw  $CD$  the bisector of the external angle at  $C$  (to meet  $BA$  produced at  $D$ ) and  $CF$  the bisector of the angle  $C$  (meeting  $AB$  in  $F$ ). Then  $CF$  is perpendicular to  $CD$ . Draw  $AN$  ( $= w$ ) and  $BM$  ( $= y$ ) parallel to  $FC$ , meeting  $DC$  in  $N$  and  $M$  respectively.  $\angle BCM = \angle ACN = (A + B)/2$ , and  $\angle ADC = (A - B)/2$ . Then

$$\frac{a}{b} = \frac{BD}{AD} = \frac{MD}{ND}.$$

By composition and division

$$\begin{aligned} \frac{a+b}{a-b} &= \frac{MD+ND}{MD-ND} = \frac{MD+ND}{MC+CN} = \frac{(y+w) \cot \frac{A-B}{2}}{(y+w) \cot \frac{A+B}{2}}; \\ \therefore \frac{a+b}{a-b} &= \frac{\tan \frac{1}{2}(A+B)}{\tan \frac{1}{2}(A-B)}. \end{aligned}$$